2006-08 ELECTRICAL

Charging System (R18A1) - Civic (All Except Hybrid)

COMPONENT LOCATION INDEX

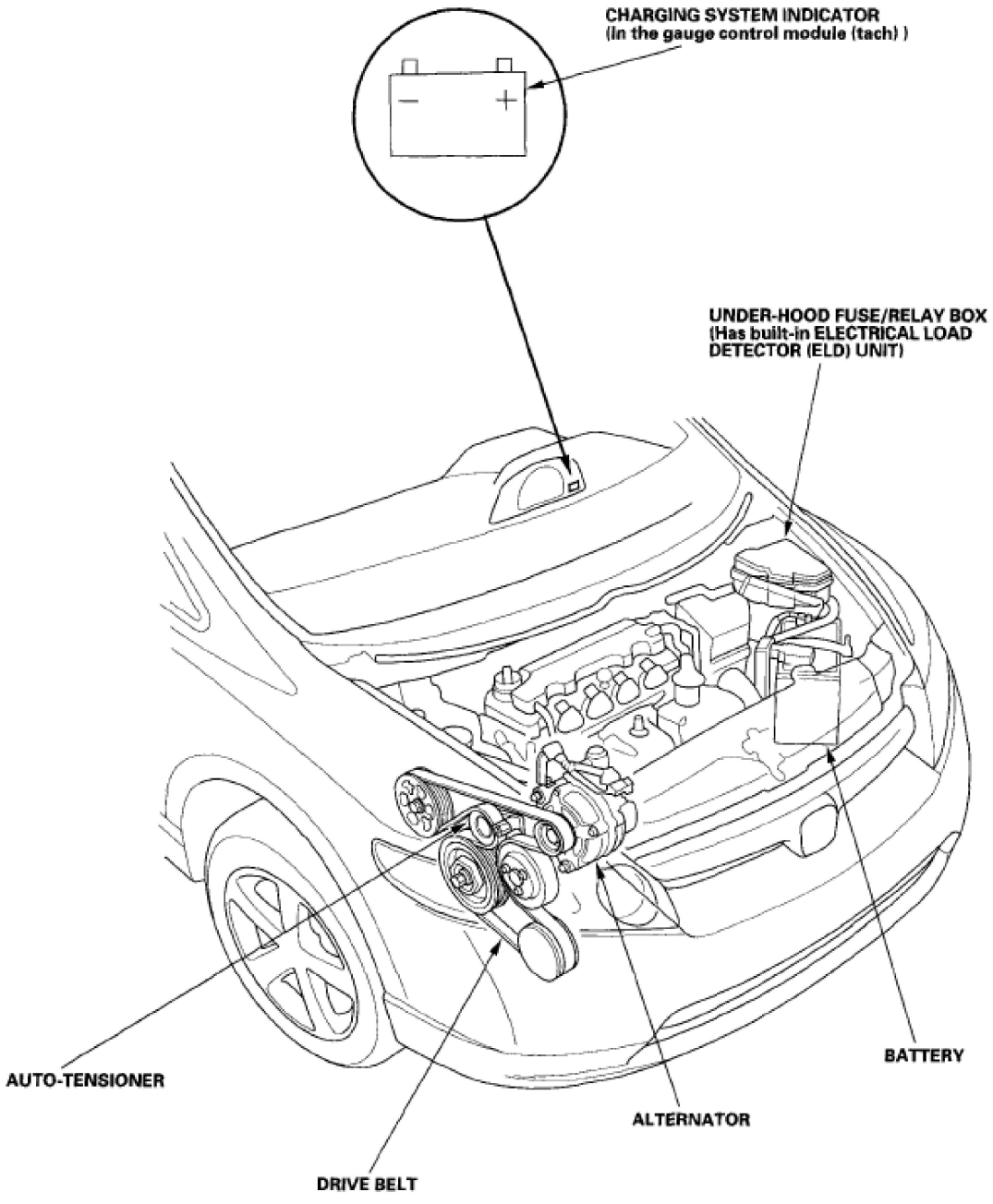

Fig. 1: Identifying Charging System Component
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Diagnostic procedure	Also check for
Charging system indicator does not come on with the ignition switch ON (II)	Troubleshoot the charging system indicator circuit (see **CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING**).	
Charging system indicator stays on	1. Check for PGM-FI DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). 2. Troubleshoot the charging system indicator circuit (see **CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING**). 3. Check for a broken drive belt (see **DRIVE BELT INSPECTION**). 4. Check the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER INSPECTION**).	
Battery discharged	1. Check for excessive parasitic electrical current draw with the ignition switch off, and the key removed. The multiplex control unit may take up to 10 minutes to turn off (sleep mode) for some models. 2. Check for a broken drive belt (see **DRIVE BELT INSPECTION**). 3. Check the drive belt auto-tensioner (see **DRIVE BELT AUTO-TENSIONER INSPECTION**). 4. Troubleshoot the alternator and regulator circuit (see **ALTERNATOR AND**	

	REGULATOR CIRCUIT TROUBLESHOOTING). 5. Check for a poor connection at the battery terminal. 6. Test the battery (see **BATTERY TEST**).	
Battery overcharged	1. Troubleshoot the alternator and regulator circuit (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**). 2. Test the battery (see **BATTERY TEST**).	

CIRCUIT DIAGRAM

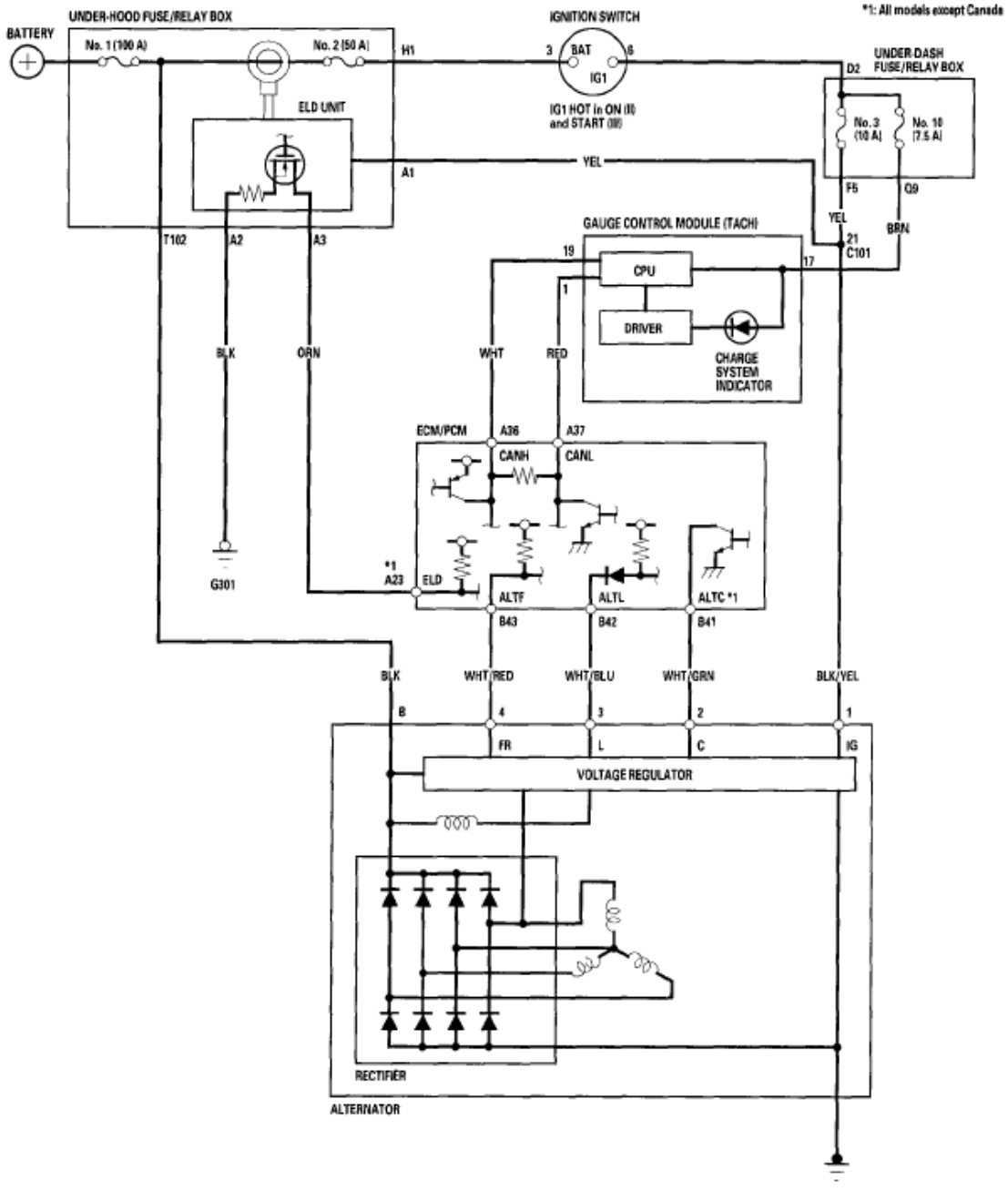

Fig. 2: Charging System - Circuit Diagram
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CHARGING SYSTEM INDICATOR CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch ON (II).

   Does the charging system indicator come on?

YES -Go to step 2.

NO -Go to step 14.

2. Start the engine. Hold the engine speed at 2,000 rpm for 1 minute.

   Does the charging system indicator go off?

   YES -Charging system indicator circuit is OK. Go to the **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING** .

   NO -Go to step 3.

3. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).

   Does the charging system indicator flash?

   YES -Go to step 4.

   NO -Replace the gauge control module (tach) (see **REPLACEMENT**).

4. Turn the ignition switch to LOCK (0)
5. Disconnect the alternator 4P connector.
6. Turn the ignition switch ON (II).

   NOTE: The charging system indicator may come on and then go off.

   Does the charging system indicator go off?

   YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

   NO -Go to step 7.

7. Turn the ignition switch to LOCK (0).

8. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
9. Turn the ignition switch ON (II).
10. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
11. Jump the SCS line with the HDS, then turn the ignition to LOCK (0).

NOTE: This step must be done to protect the ECM/PCM from damage.

12. Disconnect ECM/PCM connector B (44P).
13. Check for continuity between ECM/PCM connector terminal B42 and body ground.

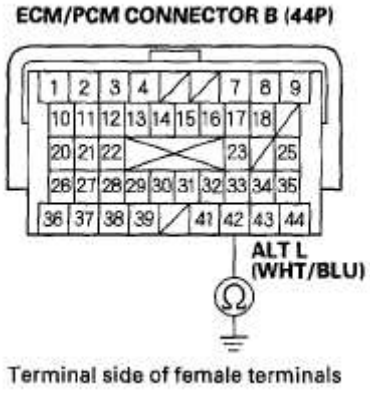

Fig. 3: Checking For Continuity Between ECM/PCM Connector Terminal B42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the alternator and the ECM/PCM.

NO -Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the

symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

14. Do the gauge control module self-diagnostic function procedure (see **SELF-DIAGNOSTIC FUNCTION**).

    Does the charging system indicator flash?

    YES -Go to step 15.

    NO -Replace the gauge control module (tach) (see **REPLACEMENT**).

15. Turn the ignition switch OFF.
16. Disconnect the alternator 4P connector.
17. Connect alternator 4P connector terminal No. 3 and body ground with a jumper wire.

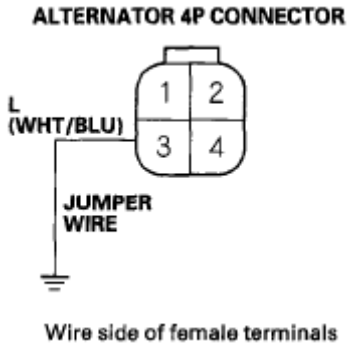

Fig. 4: Connecting Alternator 4P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Turn the ignition switch ON (II).

    Does the charging system indicator come on?

    YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO -Go to step 19.

19. Turn the ignition switch to LOCK (0).
20. Connect the HDS to the DLC (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
21. Turn the ignition switch ON (II).
22. Make sure the HDS communicates with the vehicle and the ECM/PCM. If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
23. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM/PCM from damage.

24. Disconnect ECM/PCM connector B (44P).
25. Check for continuity between ECM/PCM connector terminal B42 and body ground.

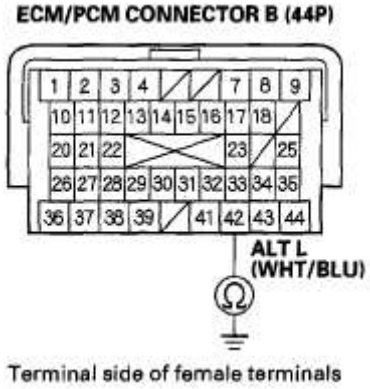

Fig. 5: Checking For Continuity Between ECM/PCM Connector Terminal B42 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the

symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

NO -Repair open in the wire between the alternator and the ECM/PCM.

ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING

1. Make sure the battery connections are good and the battery is sufficiently charged.
2. Connect a VAT-40 (or equivalent tester), and turn the selector switch to position 1 (starting).

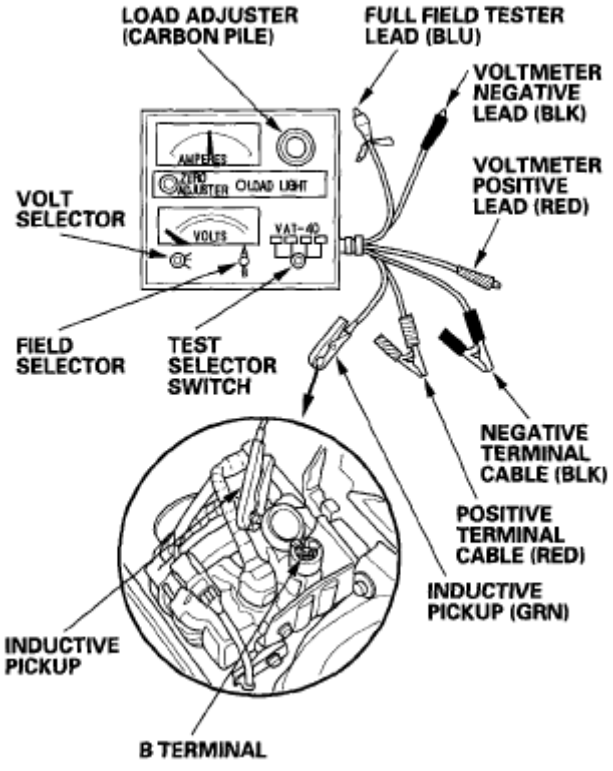

Fig. 6: Identifying VAT-40 (Or Equivalent Tester)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Start the engine. Hold the engine speed at 3,000 rpm, with no load until the radiator fan comes on, then let it idle.
4. Raise the engine speed to 2,000 rpm, and hold it there.

Is the voltage over 15.1 V?

YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or rear housing assembly (see **ALTERNATOR OVERHAUL**).

NO -Go to step 5.

5. Release the accelerator pedal, and let the engine idle.
6. Turn off all the accessories. Select the charging test on the tester.
7. Remove the inductive pickup, and zero the ammeter.
8. Place the inductive pickup over the B terminal wire of the alternator so the arrow points away from the alternator.
9. Raise the engine speed to 2,000 rpm, and hold it there.

   Is the voltage less than 13.5 V?

   YES -Go to **ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING** (see).

   NO -Go to step 10.

10. Apply a load with the VAT-40 until the battery voltage drops within 12-13.5 V.

    Is the amperage 87.5 A or more?

    YES -The charging system is OK.

    NOTE: If the charging system indicator is still on, replace the alternator (see ALTERNATOR REMOVAL AND INSTALLATION).

    NO -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

ALTERNATOR CONTROL CIRCUIT TROUBLESHOOTING

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on **HOW TO USE THE HDS (HONDA DIAGNOSTIC SYSTEM)**).
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the vehicle and the engine control module (ECM)/powertrain control module (PCM). If it doesn't, troubleshoot the DLC circuit (see **DLC CIRCUIT TROUBLESHOOTING**).
4. Check for DTCs (see **GENERAL TROUBLESHOOTING INFORMATION**). If a DTC is present, diagnose and repair the cause before continuing with this test.
5. Disconnect the alternator 4P connector from the alternator.
6. Start the engine, and turn on the headlights to high beam.
7. Measure the voltage between alternator 4P connector terminal No. 2 and the positive terminal of the battery.

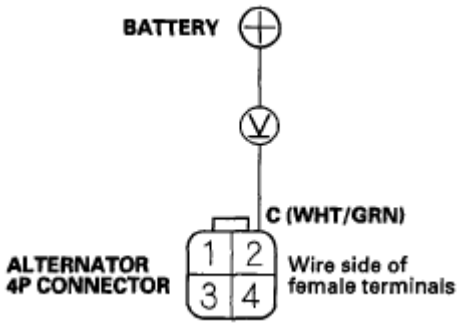

Fig. 7: Identifying Voltage Between Alternator 4P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 1 V or less?

YES -Go to step 11.

NO -Go to step 8.

8. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM/PCM from damage.

9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between ECM/PCM connector terminal B41 and body ground.

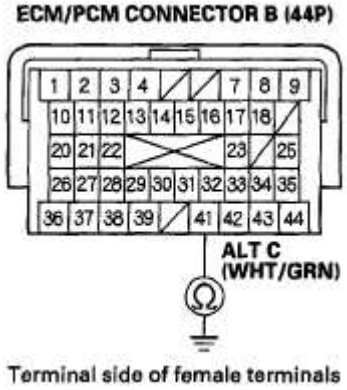

Fig. 8: Checking Continuity Between ECM/PCM Connector Terminal B41 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the alternator and the ECM/PCM.

NO -Update the ECM/PCM if it does not have the latest software (see **UPDATING ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

11. Jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This step must be done to protect the ECM/PCM from damage.

12. Disconnect ECM/PCM connector B (44P).

13. Check for continuity between ECM/PCM connector terminal B41 and alternator 4P connector terminal No. 2.

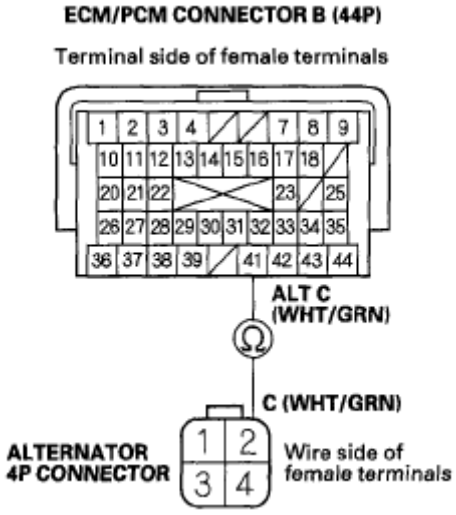
ECM/PCM CONNECTOR B (44P)
Terminal side of female terminals
1 2 3 4 7 8 9
10 11 12 13 14 15 16 17 18
20 21 22 23 25
26 27 28 29 30 31 32 33 34 35
36 37 38 39 41 42 43 44
ALT C
(WHT/GRN)
C (WHT/GRN)
ALTERNATOR
4P CONNECTOR
1 2
3 4
Wire side of
female terminals

Fig. 9: Checking Continuity Between ECM/PCM Connector Terminal B41 And Alternator 4P Connector Terminal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Replace the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**), or repair the alternator (see **ALTERNATOR OVERHAUL**).

NO -Repair open in the wire between the alternator and the ECM/PCM.

DRIVE BELT INSPECTION

1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see **DRIVE BELT INSPECTION**). After you inspected or replaced the drive belt, go to step 3.

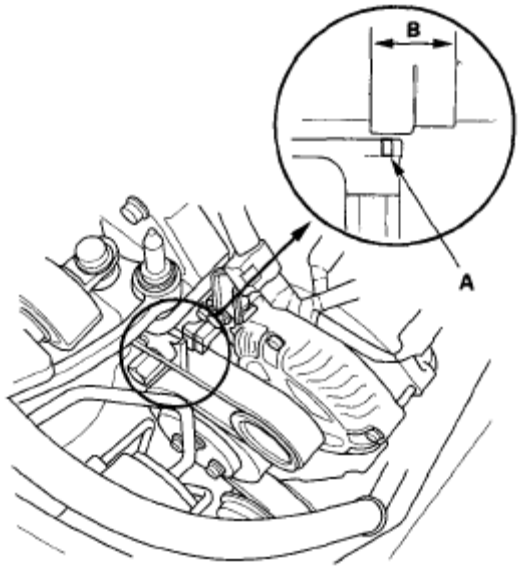

Fig. 10: Checking Auto-Tensioner Indicator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the maintenance minder required to inspect the drive belt, reset the maintenance minder (see **RESETTING THE MAINTENANCE INFORMATION DISPLAY**), and this procedure is complete.

DRIVE BELT REMOVAL/INSTALLATION

1. Set a long-handled, boxed-end wrench on the drive belt auto-tensioner from above the engine. Slowly turn the wrench in the direction shown, then remove the drive belt.

NOTE: This is a hydraulic type auto-tensioner; you must turn the wrench slowly.

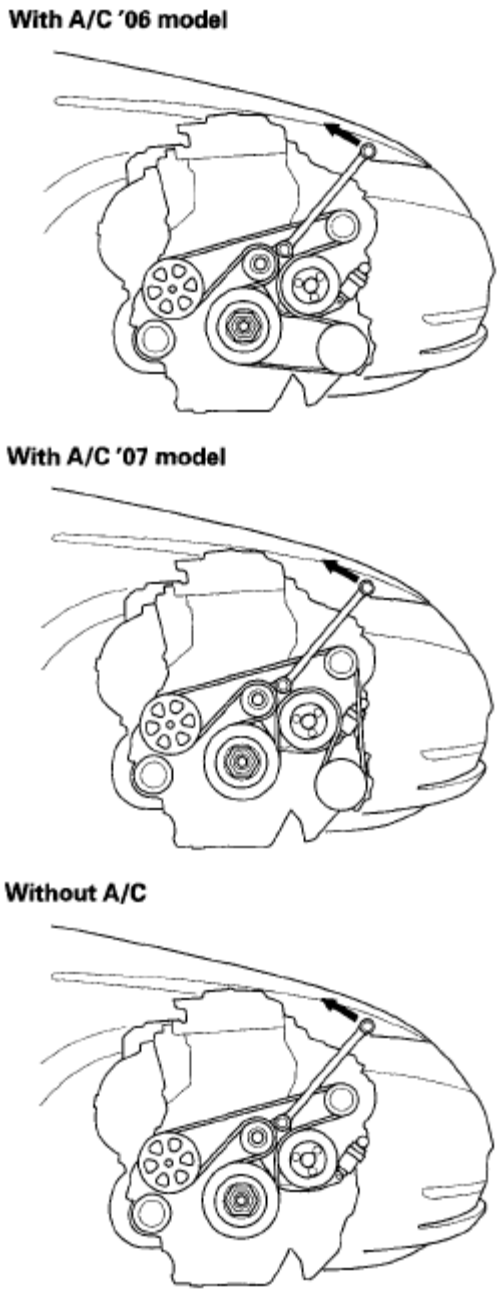

Fig. 11: Identifying Drive Belt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new belt in the reverse order of removal.

DRIVE BELT AUTO-TENSIONER INSPECTION

1. Turn the ignition switch ON (II), and make sure to turn the A/C switch OFF.

Turn the ignition switch OFF.

2. Check the position of the auto-tensioner indicator's pointer (A). Start the engine then check the position again with the engine idling. If the position of the indicator moves or fluctuates a lot, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).

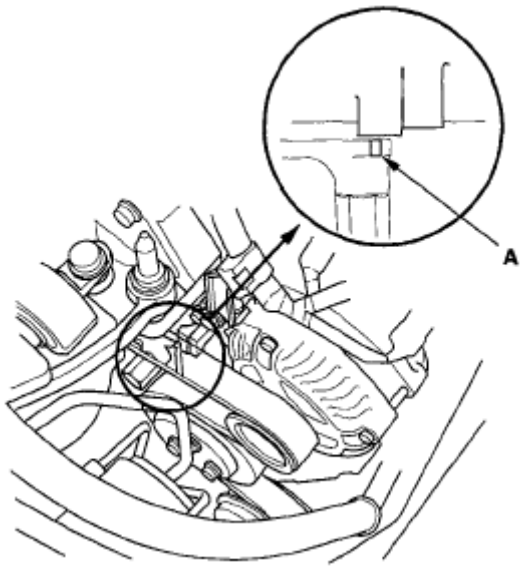

Fig. 12: Identifying Drive Belt Auto-Tensioner Inspection
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the auto-tensioner pulley (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).
4. Remove the drive belt (see **DRIVE BELT INSPECTION**).
5. Set a long-handled, boxed-end wrench on the drive belt auto-tensioner from above the engine. Slowly turn the wrench in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly, or you hear abnormal noise, replace the auto-tensioner (see **DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION**).

NOTE: This is a hydraulic type auto-tensioner; you must turn the wrench slowly.

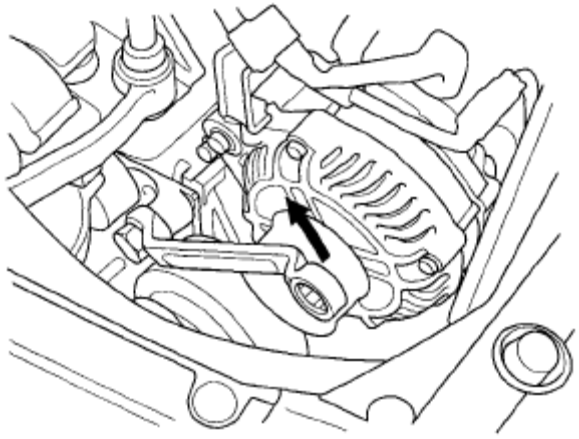

Fig. 13: Identifying Long-Handled, Boxed-End Wrench
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DRIVE BELT AUTO-TENSIONER REMOVAL/INSTALLATION

1. Loosen the water pump pulley mounting bolts.

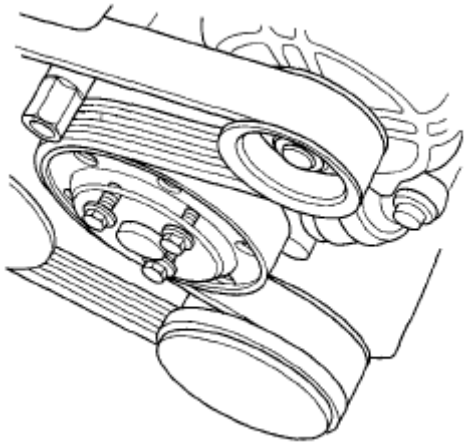

Fig. 14: Identifying Water Pump Pulley Mounting Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the drive belt (see **DRIVE BELT INSPECTION**).
3. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
4. Remove the water pump pulley.

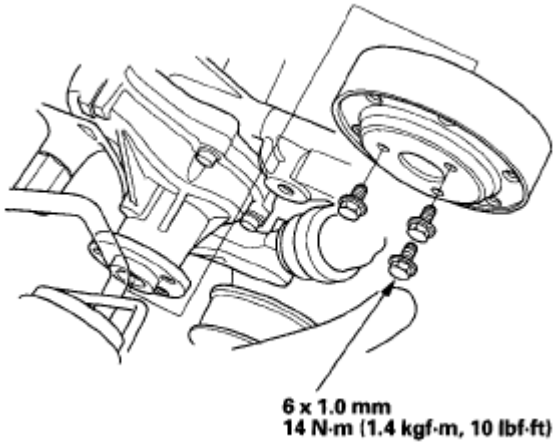

Fig. 15: Identifying Water Pump Pulley (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the drive belt auto-tensioner.

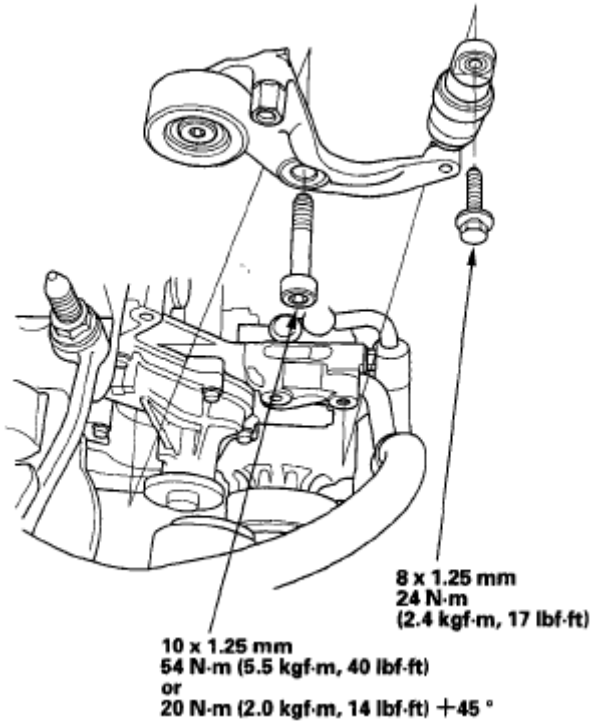

Fig. 16: Identifying Drive Belt Auto-Tensioner (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the drive belt auto-tensioner in the reverse order of removal.

DRIVE BELT AUTO-TENSIONER AIR BLEEDING

1. Remove the drive belt (see **DRIVE BELT INSPECTION**).
2. Set a long-handled, boxed-end wrench on the drive belt auto-tensioner from the top of the engine. Apply slow and steady pressure (3 seconds or more to complete the stroke) to compress the drive belt auto-tensioner. Pull the wrench back, taking 3 or more seconds to complete the stroke. Do this action a total of 3 times to complete the air bleeding.

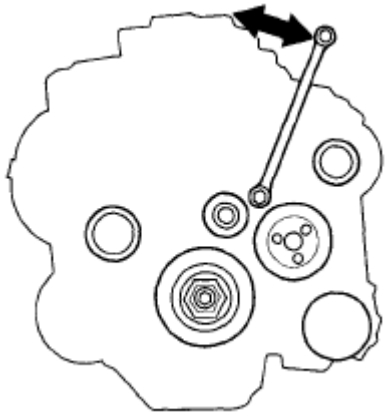

Fig. 17: Identifying Drive Belt Auto-Tensioner Air Bleeding
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the drive belt (see **DRIVE BELT INSPECTION**).

ALTERNATOR REMOVAL AND INSTALLATION

REMOVAL

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped), then write down the audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the drive belt (see **DRIVE BELT INSPECTION**).
4. Disconnect the alternator connector (A) and BLK wire (B) from the alternator.

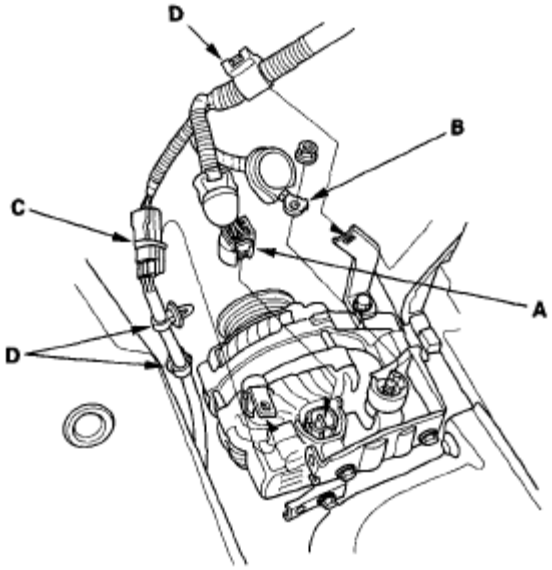

Fig. 18: Identifying Alternator Components Description
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the harness connector (C) and harness clamps (D) from the alternator.
6. Remove the alternator.

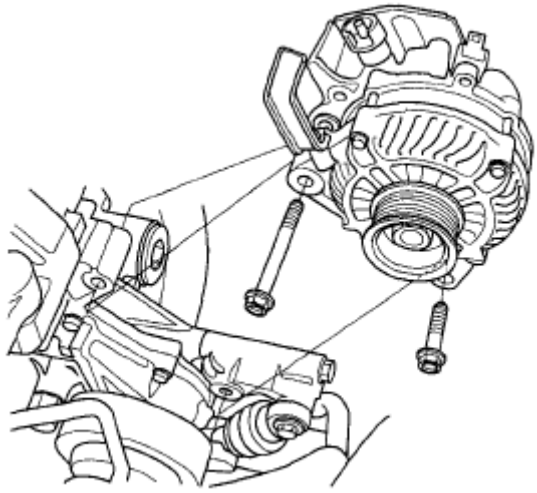

Fig. 19: Identifying Alternator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

INSTALLATION

1. Install the alternator.

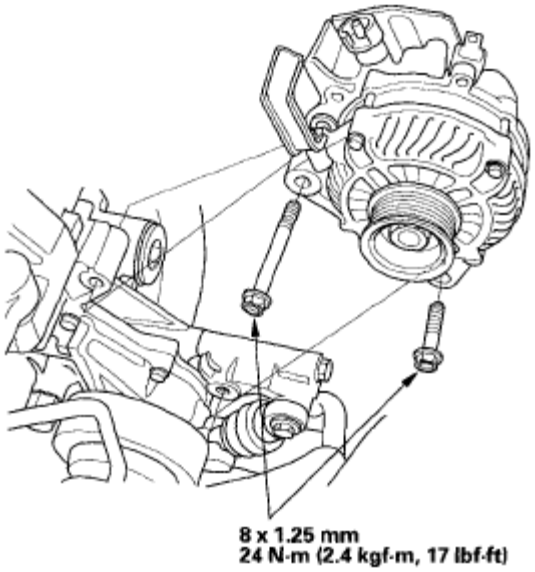

Fig. 20: Identifying Alternator (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Connect the alternator connector (A) and BLK wire (B) to the alternator.

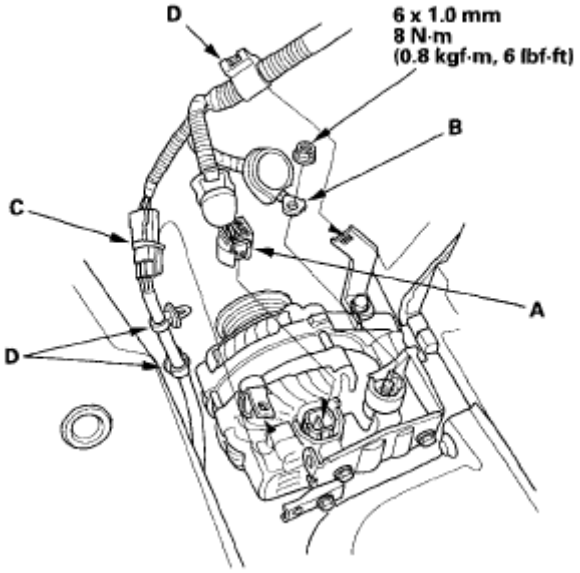

Fig. 21: Identifying Alternator Connector And BLK Wire To Alternator (With Torque Specifications)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the harness connector (C) and harness clamp (D) to the alternator.

4. Install the drive belt (see **DRIVE BELT INSPECTION**).
5. Connect the positive cable to the battery first, then connect the negative cable.
6. Enter the anti-theft code for the audio system and the navigation system (if equipped), then enter the audio presets.
7. Set the clock.

ALTERNATOR OVERHAUL

EXPLODED VIEW

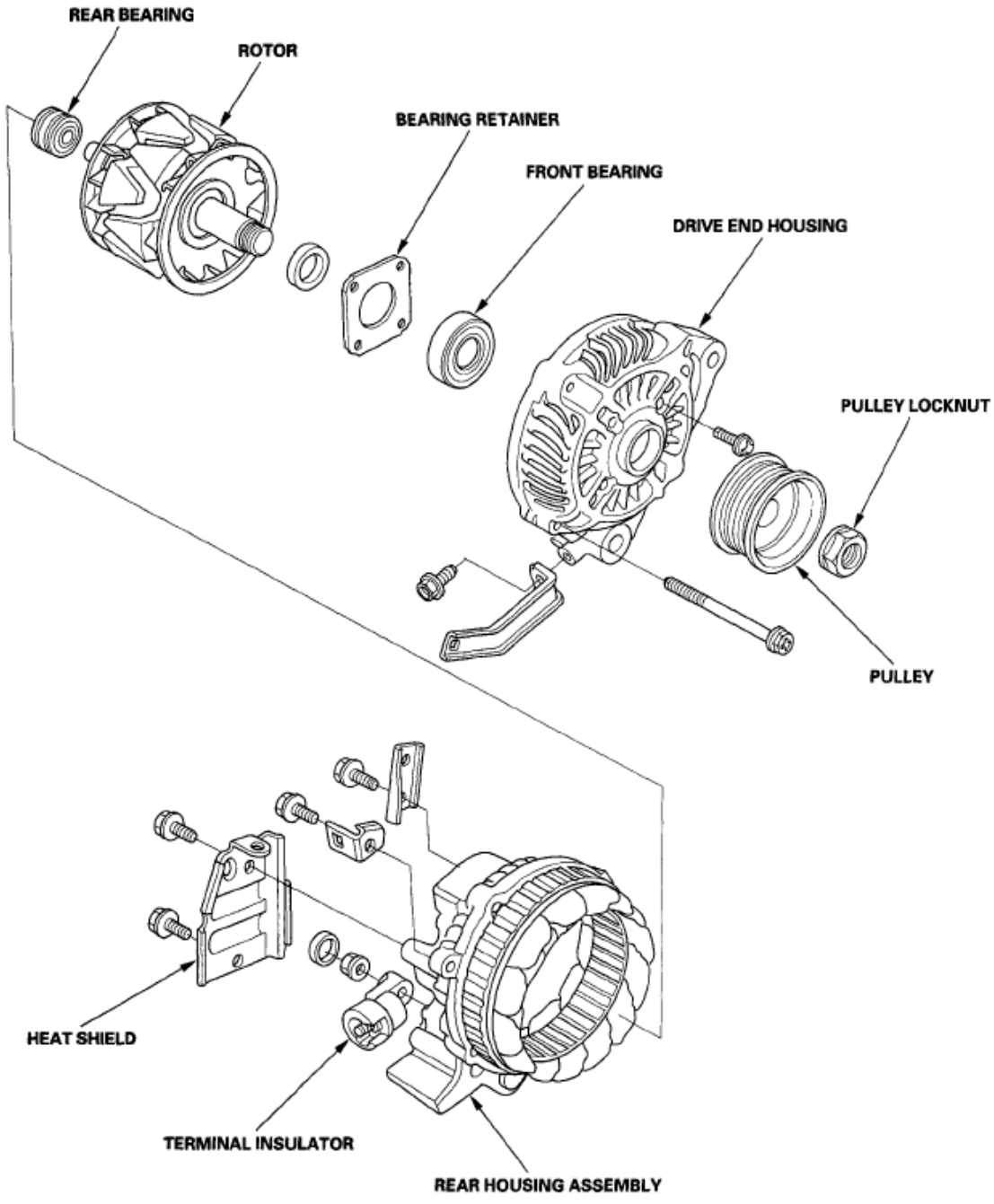

Fig. 22: Exploded View Of Alternator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

NOTE: Refer to the exploded view as needed during this procedure. See Fig. 22.

Alternator Disassembly

1. Test the alternator and regulator before you remove them (see **ALTERNATOR AND REGULATOR CIRCUIT TROUBLESHOOTING**).
2. Remove the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**).
3. Remove the heat shield (A) and harness brackets (B).

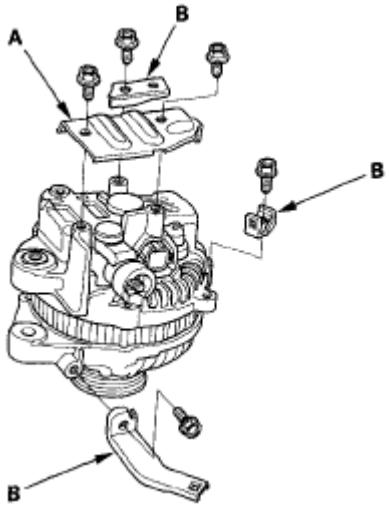

Fig. 23: Removing Heat Shield And Harness Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the terminal insulator.

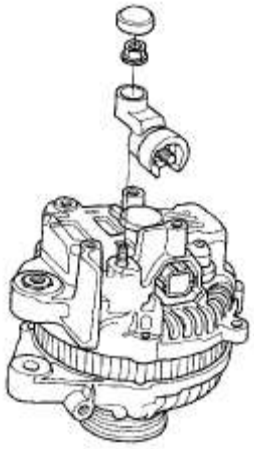

Fig. 24: Removing Terminal Insulator
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the four through bolts.

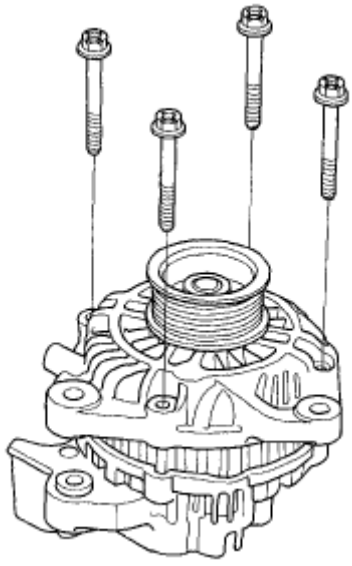

Fig. 25: Removing Through Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Heat the rear bearing seat with a heat gun for about 5 minutes (129-140 °F, 50-60 °C).

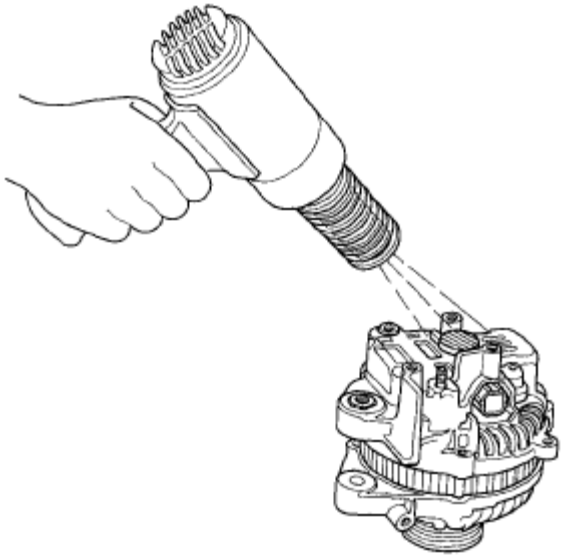

Fig. 26: Identifying Heat Rear Bearing Seat With Heat Gun
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Separate the rear housing from the drive end housing by inserting a flat-tip screwdriver into the openings and prying them apart.

NOTE: Be careful not to damage the stator with the tip of the screwdriver.

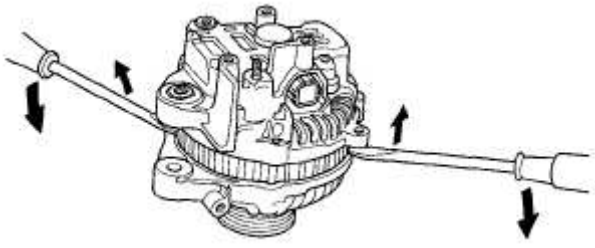

Fig. 27: Identifying Rear Housing From Drive End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Separate the rear housing (A) and drive end housing (B) with the stator (C) attached to the rear housing.

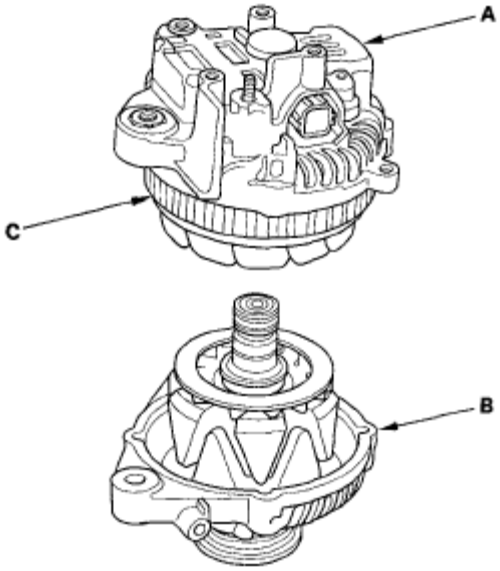

Fig. 28: Separating Rear Housing And Drive End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. If you are not replacing the front bearing and/or rear bearing, go to step 17. Clamp the rotor in a soft-jawed vise, then remove the pulley locknut.

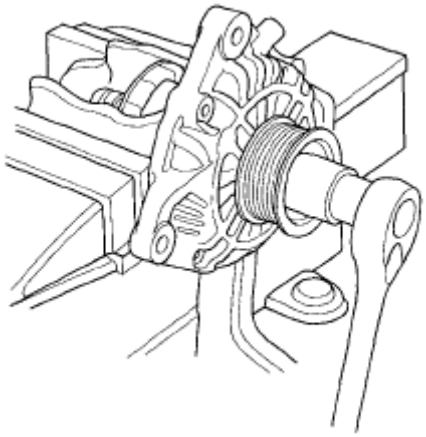

Fig. 29: Removing Pulley Locknut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the rotor using a puller as shown.

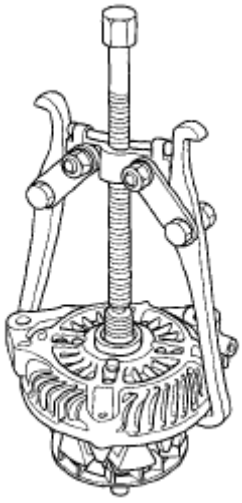

Fig. 30: Removing Rotor Using Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Inspect the rotor shaft for scoring, and inspect the bearing journal surface in the drive end housing for seizure marks.
    - If either the rotor or drive end housing is damaged, replace the alternator.
    - If both the rotor and the drive end housing are OK, go to step 12.
12. Remove the rear bearing using the puller as shown.

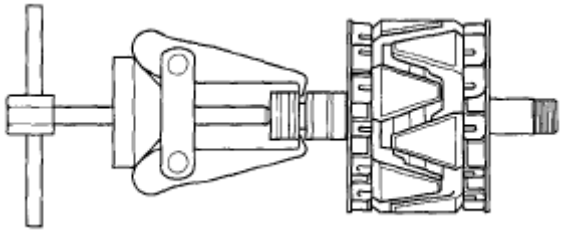

Fig. 31: Removing Rear Bearing Using Puller
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Use a hand press to install the new rear bearing. Apply pressure only on the inner race to avoid damaging the bearing.

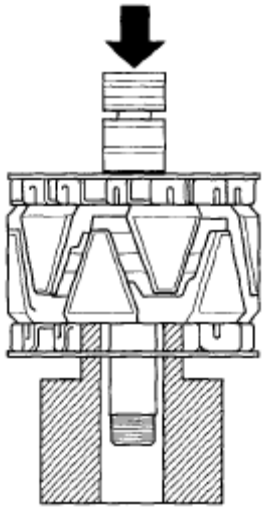

Fig. 32: Applying Pressure On Inner Race Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Remove the front bearing retainer plate.

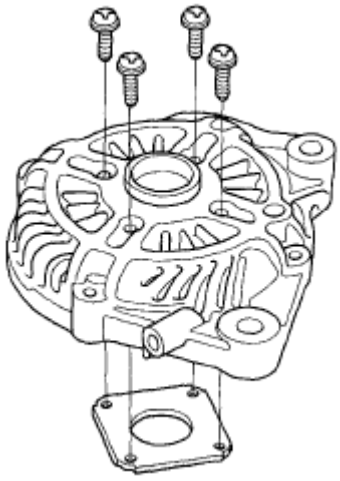

Fig. 33: Removing Front Bearing Retainer Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Support the drive end housing in a vise, and drive out the front bearing with a brass drift and hammer.

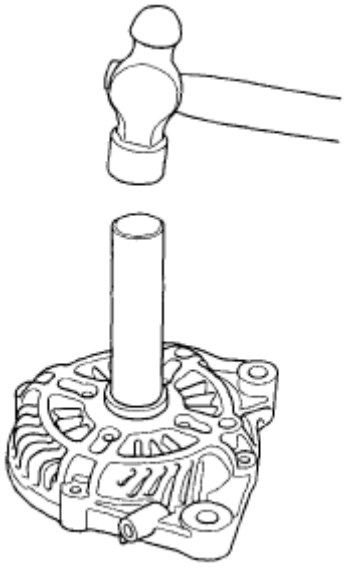

Fig. 34: Identifying Support Drive End Housing In Vise
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. With a hammer and the special tools, install a new front bearing in the drive end housing.

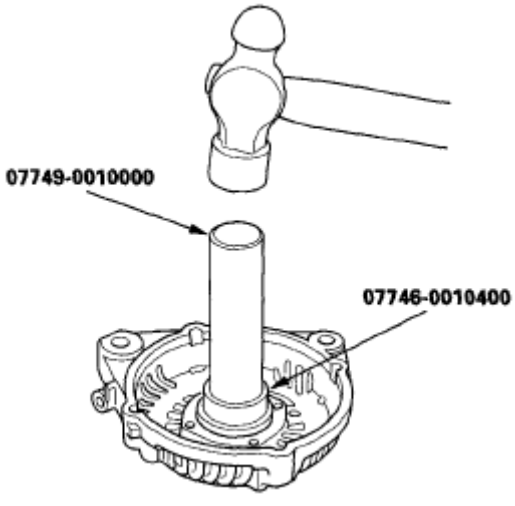

Fig. 35: Installing Front Bearing In Drive End Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Alternator Brush Inspection

17. Measure the length of both brushes with a vernier caliper.

- If either brush is shorter than the service limit, replace the rear housing assembly.
- If the brush length is OK, go to step 18.

Alternator Brush Length

Standard (New): 19.0 mm (0.75 in.)

Service Limit: 5.0 mm (0.2 in.)

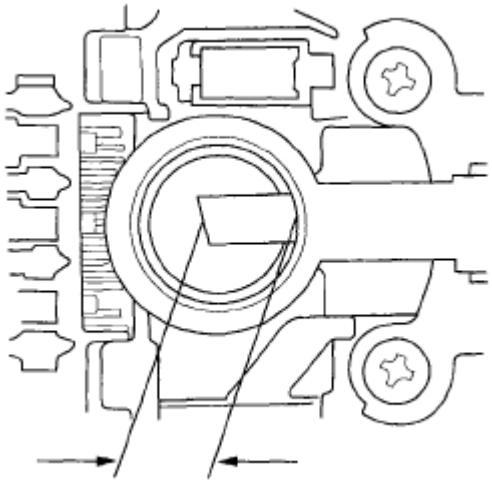

Fig. 36: Measuring Length Of Both Brushes With Vernier Caliper
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Rotor Slip Ring Test

18. Check for continuity between the slip rings (A).
    - If there is continuity, go to step 19.
    - If there is no continuity, replace the rotor assembly.

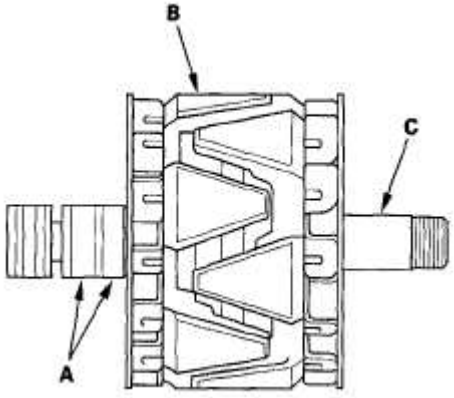

Fig. 37: Checking Continuity Between Slip Rings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Check for no continuity between each slip ring (A) and the rotor (B) and the rotor shaft (C).
    - If there is no continuity, replace the rear housing assembly, and go to step 20.
    - If there is continuity, replace the rotor assembly.

Alternator Reassembly

20. If you removed the pulley, put the rotor in the drive end housing, then tighten its locknut to 111 N.m (11.3 kgf-m, 81.7 lbf-ft).
21. Remove any grease or oil from the slip rings.
22. Push the brushes (A) in, then insert a pin or drill bit (B) (about 1.8 mm (0.77 in.) diameter) to hold them there.

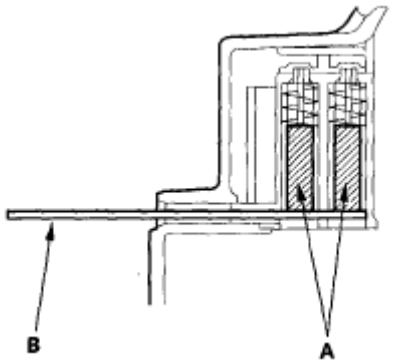

Fig. 38: Removing Grease Or Oil From Slip Rings

Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Heat the rear bearing seat with a heat gun for about 5 minutes (129-140 °F, 50-60 °C).
24. Put the rear housing assembly (A) and drive end housing/rotor assembly (B) together, tighten the four through bolts (C), and pull out the pin (D).

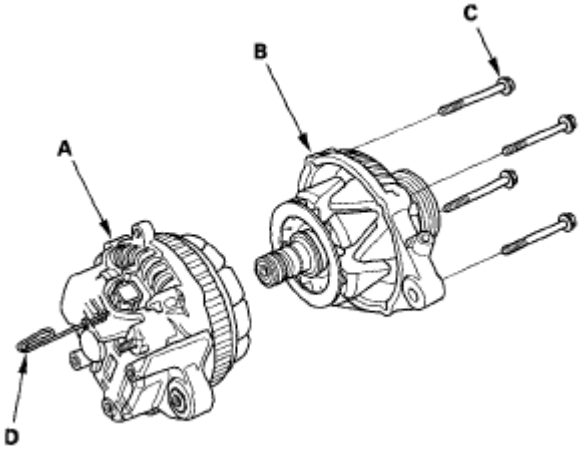

Fig. 39: Identifying Heat Rear Bearing Seat With Heat Gun
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. After assembling the alternator, turn the pulley by hand to make sure the rotor turns smoothly and without noise.
26. Install the alternator (see **ALTERNATOR REMOVAL AND INSTALLATION**) and drive belt (see **DRIVE BELT INSPECTION**).